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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,890	06/03/2004	Chia-Te Lin	NAUP0571USA	3889

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EXAMINER	
CHEN, WEN YING PATTY	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/709,890	LIN ET AL.	
	Examiner	Art Unit	
	Wen-Ying P. Chen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-12 and 14-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-12 and 14-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's Amendment filed Dec. 27, 2005 has been received and entered. Claims 5 and 13 are cancelled per the Amendment filed. Therefore, claims 1-4, 6-12 and 14-18 are now pending in the current application.

Claim Rejections - 35 USC § 103

Claims 1-4, 6-7, 10-12 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) in view of Sperger et al. (US 6342970).

With respect to claim 1 (Amended): Lee discloses in Figure 3 a display panel comprising:

a silicon substrate (element 100) with a pixel area (regions corresponding to element 179) located in a surface of the silicon substrate;

a micro color filter (element 136) disposed on the pixel area on the silicon substrate;

a liquid crystal layer (element 130) disposed on the micro color filter;

a top alignment layer (element 137) positioned on the liquid crystal layer; and

a transparent conductive layer (element 138) disposed on the top alignment layer;

wherein when light enters into the display panel, only a specific spectrum of light is permitted to transmit through the micro color filter and is then reflected upward by the silicon substrate to form images (Paragraph 0032).

Lee fails to specifically disclose that the micro color filter is composed of a plurality of stacked optical thin films comprising a low index optical thin film stack or a high index optical thin film stack.

However, Sperger et al. teach in Column 2 lines 8-12 the use of color filter in a display panel formed of a plurality of stacked optical thin films comprising a low index optical thin film stack of and a high index optical thin film stack.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the micro color filter is made of a plurality of stacked optical thin films having specific optical properties as taught by Sperger et al., since Sperger et al. teach that to use dielectric layers as the color filter helps to improve optical quality since dielectric layers have a much higher chemical and thermal stability and mechanical strength (Column 4, lines 18-38).

As to claim 2: Lee further discloses in Figure 3 that the display panel comprises a bottom alignment layer (element 133) disposed between the liquid crystal layer (element 130) and the micro color filter (element 136).

As to claim 3: Lee further discloses in Figure 3 that the display panel comprises a bottom alignment layer (element 135) formed as to increase light reflection (Paragraph 0029) disposed between the silicon substrate (element 100) and the micro color filter (element 136).

As to claim 4: Lee further discloses in Figure 3 that the display panel comprises a driving circuit disposed on the surface of the silicon substrate, the driving circuit comprising a plurality of metal electrodes (element 139) to reflect incident light through the micro color filter (element 136) upward to form images.

As to claims 6 and 7: Sperger et al. further teach in Column 2 lines 8-12 that a plurality of stacked optical thin films comprising a low index optical thin film stack of a silicon oxide type and a high index optical thin film stack of a titanium oxide type.

With respect to claims 10 and 12 (Amended): Lee discloses in Figure 3 a display panel comprising:

a silicon substrate (element 100) with a first pixel area, a second pixel area, and a third pixel area (regions corresponding to element 179) defined in a surface of the silicon substrate;

a first micro color filter, a second micro color filter, and a third micro color filter (element 136) respectively disposed in the first pixel area, the second pixel area, and the third pixel area on the surface of the silicon substrate;

a bottom alignment layer (element 133) disposed on the first micro color filter, the second micro color filter, and the third micro color filter;

a liquid crystal layer (element 130) disposed on the bottom alignment layer; a top alignment layer (element 137) disposed on the liquid crystal layer; and

a transparent conductive layer (element 138) disposed on the top alignment layer;

wherein when light enters into the display panel, lights of a first specific spectrum, a second specific spectrum, and a third specific spectrum are reflected from the first pixel area, the second pixel area, and the third pixel area respectively (Paragraph 0032).

Lee fails to specifically disclose that the micro color filter is composed of a plurality of stacked optical thin films and that they are of red, blue and green colored.

However, Sperger et al. teach in Column 2 lines 8-12 and Column 3 lines 15-16 the use of color filter in a display panel formed of a plurality of stacked optical thin films comprising a

low index optical thin film stack and a high index optical thin film stack in colors of red, blue and green.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the micro color filter is made of a plurality of stacked optical thin films having specific optical properties as taught by Sperger et al., since Sperger et al. teach that to use dielectric layers as the color filter helps to improve optical quality since dielectric layers have a much higher chemical and thermal stability and mechanical strength (Column 4, lines 18-38).

As to claim 11: Lee further discloses in Figure 3 that the display panel comprises a driving circuit (element 179, which is connect to the driving circuit) disposed on the surface of the silicon substrate to drive the substrate and reflect light transmitting through the first micro color filter, the second micro color filter, and the third micro color filter upward to form images.

As to claims 14 and 15 (Amended): Sperger et al. further teach in Column 2 lines 8-12 that a plurality of stacked optical thin films comprising a low index optical thin film stack of a silicon oxide type and a high index optical thin film stack of a titanium oxide type.

Claims 8-9 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) and Sperger et al. (US 6342970) in view of Vithana (US 2004/0165128).

With respect to claims 8 and 9: Lee and Sperger et al. disclose all of the limitations set forth in claim 1, but fail to specifically disclose that the liquid crystal layer comprises liquid crystal molecules aligned in a homeotropic type or a twisted nematic type and that the liquid crystal layer has a thickness in between the range of 0.5 to 10μm.

However, Vithana teaches in Paragraph 0015 a liquid crystal display panel that is aligned in a homeotropic type (vertically aligned) and in Paragraph 0014 that the liquid crystal layer has a thickness of about 3.5μm, which falls into the specified range of 0.5 to 10μm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee and Sperger et al. wherein the liquid crystal display is a homeotropic type having a liquid crystal layer of 3.5μm thickness as taught by Vithana, since Vithana teaches that vertically aligned displays having a specific liquid crystal layer thickness result in a desired birefringence thus achieve very high contrast (Paragraph 0004).

As to claims 16 and 17: Lee and Sperger et al. disclose all of the limitations set forth in claim 10, but fail to specifically disclose that the liquid crystal layer comprises liquid crystal molecules aligned in a homeotropic type or a twisted nematic type and that the liquid crystal layer has a thickness in between the range of 0.5 to 10μm.

However, Vithana teaches in Paragraph 0015 a liquid crystal display panel that is aligned in a homeotropic type (vertically aligned) and in Paragraph 0014 that the liquid crystal layer has a thickness of about 3.5μm, which falls into the specified range of 0.5 to 10μm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee and Sperger et al. wherein the liquid crystal display is a homeotropic type having a liquid crystal layer of 3.5μm thickness as taught by Vithana, since Vithana teaches that vertically aligned displays having a specific liquid crystal layer thickness result in a desired birefringence thus achieve very high contrast (Paragraph 0004).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) and Sperger et al. (US 6342970) in view of Miyawaki (US 5793452).

Lee and Sperger et al. disclose all of the limitations set forth in claim 10, but fail to disclose that the liquid crystal layer comprises a cooling system on the silicon substrate.

However, Miyawaki teaches in Column 2 lines 8-32 of a display panel, which comprises a cooling system disposed on the silicon substrate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee and Sperger et al. wherein the liquid crystal display comprises a cooling system on the substrate as taught by Miyawaki, since Miyawaki teaches that the cooling system helps to prevent degradation of the picture quality due to heating (Column 1, lines 57-59).

Response to Arguments

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed Dec. 27, 2005 have been fully considered but they are not persuasive.

Regarding claims 1 and 10, Applicant argues that the Amended claims 1 and 10 contain limitations previously presented in claims 5 and 13, thus overcome the previous rejections of claims 1 and 10 based on Lee (US 2004/0036824).

However, in the previous Office Action, claims 5 and 13 were rejected based on Lee (US 2004/0036824) in view of Sperger et al. (US 6342970). Applicant did not comment or argue the

claims rejected in view of Sperger et al. Therefore, although claims 5 and 13 are now incorporated into claims 1 and 10 respectively, claims 1 and 10 still stand rejected based on Lee in view of Sperger et al.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Ying P. Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Ying P Chen
Examiner
Art Unit 2871

WPC
2/22/06

ANDREW SCHECHTER
PRIMARY EXAMINER